WHAT IS CLAIMED IS:

1.   A communication device comprising:

a storage section for storing all bandwidths allotted individually to a plurality of

5   nodes, said nodes including a local station and accommodated in a connectionless network;

a bandwidth computing section

for obtaining from said storage section bandwidths BWt and BWr, which are

allotted respectively to said local station and a destination included in said plurality

of nodes, said local station being a transmitting party of transmission information,

10   and also obtaining from said storage section a sum total ΣBW of bandwidths allotted

to all nodes other than the destination and

for computing a transmission bandwidth (= BWt $\cdot$ BWr/ ΣBW) to be applied to

transmission of the transmission information, based on these bandwidths BWt and

BWr and the sum total ΣBW; and

15   a transmitting section for shaping said transmission information and transmitting

the transmission information to said connectionless network within the range of the

transmission bandwidth computed by said bandwidth computing section.

2.   A communication device comprising:

a storage section for storing all bandwidths allotted individually to a plurality of

20   nodes, said nodes including a local station and accommodated in a connectionless network;

a bandwidth computing section

in which uncertainty U is given in advance, said uncertainty U being a value

for a monotone nondecreasing function of a ratio between a bandwidth allotted to

said local station and a bandwidth included in the bandwidth allotted to the local

25   station for transmitting any transmission information,

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for obtaining from said storage section bandwidths BWt and BWr, which are allotted respectively to said local station and a destination included in said plurality of nodes, said local station being a transmitting party of transmission information, and also obtaining from said storage section a sum total ΣBW of bandwidths allotted

5   to all nodes other than the destination, and

for computing a transmission bandwidth (= $U \cdot BWt \cdot BWr / \Sigma BW$) to be applied to transmission of the transmission information, based on a uncertainty U, the bandwidths BWt and BWr, and the sum total ΣBW; and

a transmitting section for shaping said transmission information and transmitting

10   the transmission information to said connectionless network within the range of the transmission bandwidth computed by said bandwidth computing section.

3.   The communication device according to claim 1, further comprising

a bandwidth setting section

for notifying the bandwidth allotted in advance to said local station to nodes

15   other than the local station included in the plurality of nodes, and

for storing in said storage section, together with the bandwidth allotted to the local station, bandwidths notified individually by said other nodes.

4.   The communication device according to claim 2, further comprising

a bandwidth setting section

20   for notifying the bandwidth allotted in advance to said local station to nodes other than the local station included in the plurality of nodes, and

for storing in said storage section, together with the bandwidth allotted to the local station, bandwidths notified individually by said other nodes.

5.   The communication device according to claim 1, further comprising

25   a bandwidth setting section

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for receiving bandwidths respectively allotted to said plurality of nodes in advance and downloaded by a predetermined device and

for storing said received bandwidths in said storage section.

6. The communication device according to claim 2, further comprising

a bandwidth setting section

for receiving bandwidths respectively allotted to said plurality of nodes in advance and downloaded by a predetermined device and

for storing said received bandwidths in said storage section.

7. The communication device according to claim 1, further comprising

a bandwidth setting section for storing in said storage section bandwidths respectively allotted in advance to said plurality of nodes and stored in a predetermined storage medium.

8. The communication device according to claim 2, further comprising

a bandwidth setting section for storing in said storage section bandwidths respectively allotted in advance to said plurality of nodes and stored in a predetermined storage medium.

9. The communication device according to claim 1, further comprising

a bandwidth setting section

for adopting man-machine interface related to the setting of bandwidths to be allotted respectively to all or a part of said plurality of nodes and

for storing in said storage section the bandwidths set under the man-machine interface.

10. The communication device according to claim 2, further comprising

a bandwidth setting section

for adopting man-machine interface related to the setting of bandwidths to

be allotted respectively to all or a part of said plurality of nodes and

for storing in said storage section the bandwidths set under the man-machine interface.

11. The communication device according to claim 2, further comprising

an uncertainty updating section for updating said uncertainty U according to one of an event occurring in said connectionless network, and distribution of traffic in the network, and

wherein said bandwidth computing section computes said transmission bandwidth by applying said uncertainty U updated by said uncertainty updating section.

12. The communication device according to claim 11, wherein

said uncertainty updating section updates said uncertainty U at a predetermined frequency or cycle.

13. The communication device according to claim 11, wherein

said uncertainty updating section obtains from said storage section the bandwidths BWr, BWt, which are allotted respectively to a node to be the destination of said transmission information and said local station out of the plural nodes, and sets the uncertainty U at a value weighted larger as the sum total of these bandwidths BWr, BWt is larger.

14. The communication device according to claim 11, wherein

said uncertainty updating section sets the uncertainty U at a value weighted conforming to the attribute of a flow of a packet including the transmission information to be transmitted.

15. The communication device according to claim 3, wherein

said bandwidth setting section notifies of said bandwidth allotted to said local station to the nodes other than said local station, every time this bandwidth is updated.

16. The communication device according to claim 4, wherein

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said bandwidth setting section notifies of said bandwidth allotted to said local station to the nodes other than said local station, every time this bandwidth is updated.

17.   The communication device according to claim 3, wherein:

a transmission path or a path, different from said connectionless network, is formed between said bandwidth setting section and the nodes other than said local station, of said plurality of nodes; and

said bandwidth setting section notifies said bandwidth allotted to said local station to said other nodes via said transmission path or said path.

18.   The communication device according to claim 4, wherein:

a transmission path or a path, different from said connectionless network, is formed between said bandwidth setting section and the nodes other than said local station, of said plurality of nodes; and

said bandwidth setting section notifies said bandwidth allotted to said local station to said other nodes via said transmission path or said path.

19.   The communication device according to claim 15, wherein:

a transmission path or a path, different from said connectionless network, is formed between said bandwidth setting section and the nodes other than said local station, of said plurality of nodes; and

said bandwidth setting section notifies said bandwidth allotted to said local station to said other nodes via said transmission path or said path.

20.   The communication device according to claim 16, wherein:

a transmission path or a path, different from said connectionless network, is formed between said bandwidth setting section and the nodes other than said local station, of said plurality of nodes; and

said bandwidth setting section notifies said bandwidth allotted to said local station to

said other nodes via said transmission path or said path.

21.   The communication device according to claim 1, further comprising

a clocking section for timing and giving time, and wherein

said bandwidth computing section applies a combination of updated bandwidths,

stored in said storage section, to computing of said transmission bandwidth, on or after the

predetermined time given by said clocking section.

22.   The communication device according to claim 2, further comprising

a clocking section for timing and giving time, and wherein

said bandwidth computing section applies a combination of updated bandwidths,

stored in said storage section, to computing of said transmission bandwidth, on or after the

predetermined time given by said clocking section.

23.   The communication device according to claim 1, wherein:

said storage section has individual storage areas for individually storing a

combination of updated bandwidths applied in computing the transmission bandwidth by

said bandwidth computing section and a succeeding combination added alteration to said

combination; and

said bandwidth computing section applies said succeeding combination, included in

the combinations stored in said storage section, to computing of said transmission

bandwidth.

24.   The communication device according to claim 1, wherein:

said storage section has individual storage areas for individually storing a

combination of updated bandwidths applied in computing the transmission bandwidth by

said bandwidth computing section and a succeeding combination added alteration to said

combination; and

said bandwidth computing section applies said succeeding combination, included in

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the combinations stored in said storage section, to computing of said transmission bandwidth.

25.   A bandwidth management method comprising the steps of:

obtaining bandwidths BWt and BWr, which are allotted respectively to nodes to be a transmitting party and a destination of transmission information, of a plurality of nodes accommodated in a connectionless network, and also obtaining a sum total of bandwidths Σ BW allotted to nodes other than the destination;

computing a transmission bandwidth (= BWt · BWr/ Σ BW) to be applied to transmission of said transmission information based on said bandwidths BWt and BWr and the sum total Σ BW; and

transmitting said transmission information to said connectionless network within a range of said computed transmission bandwidth after shaping said transmission information.

26.   A bandwidth management method comprising the steps of:

obtaining bandwidths BWt and BWr, which are allotted respectively to nodes to be a transmitting party and a destination of transmission information, of a plurality of nodes accommodated in a connectionless network, and also obtaining a sum total of bandwidths Σ BW allotted to all nodes other than the destination;

computing a transmission bandwidth (= U · BWt · BWr/ Σ BW) to be applied to transmission of said transmission information based on an uncertainty U, the bandwidths BWt and BWr, and the sum total of the bandwidths Σ BW, said uncertainty U being a value for a monotone nondecreasing function of a ratio between a bandwidth allotted to said transmitting party and a bandwidth included in the bandwidth allotted to the transmission information for transmitting any transmission information; and

transmitting the transmission information to the connectionless network within a range of the computed transmission bandwidth after shaping said transmission information.

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